

Appendix 3: Differences in Screening and Grading Protocols for Detecting Diabetic Retinopathy

	<u>Was Mydriasis used?</u>	<u>How many and which retinal fields were taken?</u>	<u>Photographs or digital retinal photographs</u>	<u>Which cameras were used?</u>	<u>Were patients tested using slit lamp (biomicroscopy)</u>	<u>What grading protocol was used?</u>	<u>Were screeners and graders trained and/or accredited?</u>	<u>Was grading quality assured?/ Was grading assessed elsewhere?</u>	<u>How many times were images graded?</u>
Agardh, E. and P. Tababat-Khani	No information	One central and one nasal 50° field per eye.	Red free digital images	No information	No information	International Diabetic Retinopathy and Macula Edema Severity Scales	Performed by specially trained ophthalmic nurses	No information	No information
Jones et.al	Both pupils were dilated with 1% tropicamide drops	Two photographs of each eye were taken, one centred on the optic nerve and the other on the fovea.  Images taken by trained retinal screeners	Mixed  Before 2000: colour transparency film  From 2000: digital imaging	Mobile retinal cameras: Canon 45NM or 46NM fundus cameras (Canon UK, Reigate, U.K.) with 458 fields and Orion Eyecap and DRSS digital imaging software.	No information	1990 to 2002: Descriptive grading system based on European guidelines  From 2003: U.K. National Screening Committee grading system  After 2006: NSC grading system  Described as 'virtually identical'	Before 2000: diabetologist with a specialist interest in retinopathy (R.H.G.).  From 2000: seven primary graders	Yes. Nationally accredited arbitration grader	No information
Kohner et.al	Yes	Four-field 30° retinal photographs taken as stereo pairs	No information	No information	No information	Allocated to a retinopathy severity level using the Early Treatment of Diabetic Retinopathy Study (ETDRS) final scale, modified for four standard fields.  Retinopathy severity categorised as no retinopathy, MA only in one eye, MA in both eyes or more severe retinopathy	No information	Only patients with a set of good quality images of both eyes were included in the study.	No information

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Kristinsson, J. K., et al.	Yes	No information	No information	No information	Yes	No information	No information	No information	No information
Looker et al.	If required	Single field	Digital photograph	No information	Slit lamp outcomes were not available for all patients, but were available results were used.	Scottish grading system	No information	No information	No information
Maguire et.al	Yes – 1% cyclopentolate and 2.5% phenylephrine	Stereoscopic fundal photography of seven fields. Non simultaneous photographic pairs for each eye	Viewed with a Donaldson Stereoviewer providing a 3D representation of the fundus.	Topcon fundus camera	Yes. Slit lamp examination of the anterior segment.	Early Treatment Diabetic Retinopathy Study adaption of the modified Ailie House classification of diabetic retinopathy.	Graded by an ophthalmologist with a large sample graded by a second grader independently.	When necessary, a grading supervisor was used to adjudicate. Agreement between two graders was statistically assessed.	No information
Misra et.al	AS JONES et al								
Ólafsdóttir et.al	Yes		Colour photographs taken with a 90-diopter lens		Yes	Visual acuity reported by the better eye.  Retinopathy level determined as the stage of the worse eye.  Visual acuity measured on a snellen chart at 6 m with the best refractive correction	Screened by an ophthalmologist		
Soto-Pedre et al.	No Information	One fundus photograph centred on the macula of each eye taken with 45° nonmydriatic retinal camera	Instant film Polaroid	Canon CR4-45NM	No	International Diabetic Retinopathy and Macula Edema Severity Scales.  Level of disease recorded for the worse eye.	Stored polaroid photographs were graded by the same retina specialist for this study.	No	Once for the purpose of this retrospective study
Stratton et al.	Yes	Two standard 45 fields – Macular and	Digital colour retinal	No information	No information	Grading based on the Early Treatment	Trained assessors in a central location to	Internal and external quality	No information

		disc centred - per eye	photographs			of Diabetic Retinopathy Study (ETDRS) severity scale  Background retinopathy defined using the R1M0 category on the English NHS Diabetic Eye Screening Programme.	the screening venues	assured reading process that reaches national recommendations.	
Thomas et.al	Tropicamide (applied to each eye 15 minutes before screening)	Two 45 degree digital retinal images per eye - one macular centred and one nasal field	Non-mydriatic Canon DGi camera			Screening undertaken by a trained photographer  Grading undertaken by trained staff use an enriched version of English National Screening Protocol	Before screening, a trained healthcare assistant assesses visual acuity in both eyes using an illuminated 3m Snellen chart		Retinal images transferred to a central reading centre for grading
Younis et.al 2003a	1% tropicamide with or without phenylephrine	Three overlapping non-stereoscopic 33mm transparency photographs of each eye	Either Canon CR4-45NM with 45 degree fields or a Topcon TRC 50 SX camera with 50 degree fields.	No information	Patients with ungradable images or STDR invited for slit lamp biomicroscopy by specialists in medical retinal disease.	STDR defined as moderate pre-proliferative retinopathy or greater and / or significant maculopathy in any eye.  Graded by trained graders with a Modified Wisconsin algorithm.	No information	No information	No information
Younis, et al. 2003b	As Younis 2003b								